ACZ Laboratories, Inc.
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Analytical Report

October 05, 2021

Report to:
Holly Beggy
Hudbay Minerals
5255 E Williams Circle
Suite W1065
Tucson, AZ 85711

cc: David Krizek

Bill to:
Rosemont Copper Company
Hudbay Minerals
5255 E Williams Circle
Suite W1065
Tuscon, AZ 85711

Project ID:
ACZ Project ID: L68737

Holly Beggy:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 23, 2021. This project has been assigned to ACZ's project number, L68737. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L68737. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 04, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

Hudbay Minerals
Project ID:
Sample ID: D1-20A

ACZ Sample ID: ***L68737-01***
Date Sampled: *09/21/21 08:30*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/29/21 8:42	bsu
Total Hot Plate Digestion (1312)	M3010A ICP								09/29/21 13:15	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.420			mg/L	0.05	0.25	09/30/21 13:20	jlw
Aluminum, total (3050)	M6010D ICP	101	7210		*	mg/Kg	5.05	25.3	09/29/21 2:57	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/30/21 14:25	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.367	B	*	mg/Kg	0.202	1.01	09/29/21 17:32	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00418		*	mg/L	0.0002	0.001	09/30/21 14:25	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	8.68			mg/Kg	0.101	0.505	09/29/21 17:32	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/30/21 14:25	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.246			mg/Kg	0.0253	0.126	09/29/21 17:32	bsu
Calcium (1312)	M6010D ICP	1	7.49			mg/L	0.1	0.5	09/30/21 13:20	jlw
Calcium, total (3050)	M6010D ICP	101	14700			mg/Kg	10.1	50.5	09/29/21 2:57	jlw
Copper (1312)	M6020B ICP-MS	1	0.00461		*	mg/L	0.0008	0.002	09/30/21 14:25	bsu
Copper, total (3050)	M6020B ICP-MS	505	12.4			mg/Kg	0.404	1.01	09/29/21 17:32	bsu
Iron (1312)	M6010D ICP	1	0.234		*	mg/L	0.06	0.15	09/30/21 13:20	jlw
Iron, total (3050)	M6010D ICP	101	12200		*	mg/Kg	6.06	15.2	09/29/21 2:57	jlw
Lead (1312)	M6020B ICP-MS	1	0.00030	B	*	mg/L	0.0001	0.0005	09/30/21 14:25	bsu
Lead, total (3050)	M6020B ICP-MS	505	9.80			mg/Kg	0.0505	0.253	09/29/21 17:32	bsu
Magnesium (1312)	M6010D ICP	1	0.68	B	*	mg/L	0.2	1	09/30/21 13:20	jlw
Magnesium, total (3050)	M6010D ICP	101	2130			mg/Kg	20.2	101	09/29/21 2:57	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/30/21 13:20	jlw
Manganese, total (3050)	M6010D ICP	101	243		*	mg/Kg	1.01	5.05	09/29/21 2:57	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/29/21 11:54	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	4.1	B	*	ng/g	2.2	11	09/29/21 12:52	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/30/21 13:20	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/29/21 2:57	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00068	B	*	mg/L	0.0004	0.001	09/30/21 14:25	bsu
Nickel, total (3050)	M6020B ICP-MS	505	4.78			mg/Kg	0.202	0.505	09/29/21 17:32	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00011	B	*	mg/L	0.0001	0.00025	09/30/21 14:25	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.112	B	*	mg/Kg	0.0505	0.126	09/29/21 17:32	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/30/21 14:25	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.0878	B		mg/Kg	0.0505	0.253	09/29/21 17:32	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/30/21 13:20	jlw
Zinc, total (3050)	M6010D ICP	101	23.8		*	mg/Kg	2.02	5.05	09/29/21 2:57	jlw

Hudbay Minerals
Project ID:
Sample ID: D1-20A

ACZ Sample ID: ***L68737-01***
Date Sampled: *09/21/21 08:30*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	09/27/21 12:45	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	09/27/21 12:45	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/27/21 12:45	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.286		*	mmhos/cm	0.001	0.01	09/29/21 0:00	zln
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
Temperature		1	21.2		*	C	0.1	0.1	09/29/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
pH		1	7.5		*	units	0.1	0.1	09/29/21 0:00	zln
Solids, Percent	D2216-80	1	98.8		*	%	0.1	0.5	09/27/21 16:00	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	09/27/21 12:43	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/23/21 16:10	gkh
Digestion - Hot Plate	M3050B ICP								09/27/21 10:41	mep
Digestion - Hot Plate	M3050B ICP-MS								09/27/21 10:41	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/28/21 17:17	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/24/21 10:09	mep
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/24/21 10:09	mep
Synthetic Precip. Leaching Procedure	M1312								09/27/21 21:03	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D1-20A TREE

ACZ Sample ID: ***L68737-02***
Date Sampled: *09/21/21 08:30*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/29/21 15:00	jlw
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/29/21 9:40	bsu

Hudbay Minerals
Project ID:
Sample ID: D1-20A TREE

ACZ Sample ID: ***L68737-02***
Date Sampled: *09/21/21 08:30*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.323			mg/L	0.05	0.25	09/30/21 13:32	jlw
Aluminum, extractable (AB-DTPA)	M6010D ICP	50	<2.5	U	*	mg/Kg	2.5	12.5	09/28/21 23:16	jlw
Aluminum, total (3050)	M6010D ICP	101	10800		*	mg/Kg	5.05	25.3	09/29/21 3:01	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/30/21 14:27	bsu
Antimony, extractable (AD-DTPA)	M6020B ICP-MS	50	<0.02	U	*	mg/Kg	0.02	0.1	09/28/21 13:25	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.300	B	*	mg/Kg	0.202	1.01	09/29/21 17:36	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00455		*	mg/L	0.0002	0.001	09/30/21 14:27	bsu
Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	50	0.130		*	mg/Kg	0.01	0.05	09/28/21 13:25	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	6.38			mg/Kg	0.101	0.505	09/29/21 17:36	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/30/21 14:27	bsu
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0251		*	mg/Kg	0.0025	0.0125	09/28/21 13:25	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.290			mg/Kg	0.0253	0.126	09/29/21 17:36	bsu
Calcium (1312)	M6010D ICP	1	9.38			mg/L	0.1	0.5	09/30/21 13:32	jlw
Calcium, extractable (AB-DTPA)	M6010D ICP	50	390			mg/Kg	5	25	09/28/21 23:16	jlw
Calcium, total (3050)	M6010D ICP	101	9840			mg/Kg	10.1	50.5	09/29/21 3:01	jlw
Copper (1312)	M6020B ICP-MS	1	0.00316		*	mg/L	0.0008	0.002	09/30/21 14:27	bsu
Copper, extractable (AB-DTPA)	M6020B ICP-MS	50	1.62		*	mg/Kg	0.04	0.1	09/28/21 13:25	bsu
Copper, total (3050)	M6020B ICP-MS	505	18.3			mg/Kg	0.404	1.01	09/29/21 17:36	bsu
Iron (1312)	M6010D ICP	1	0.180		*	mg/L	0.06	0.15	09/30/21 13:32	jlw
Iron, extractable (AB-DTPA)	M6010D ICP	50	5.61	B	*	mg/Kg	3	7.5	09/28/21 23:16	jlw
Iron, total (3050)	M6010D ICP	101	15300		*	mg/Kg	6.06	15.2	09/29/21 3:01	jlw
Lead (1312)	M6020B ICP-MS	1	0.00017	B	*	mg/L	0.0001	0.0005	09/30/21 14:27	bsu
Lead, extractable (AB-DTPA)	M6020B ICP-MS	50	1.43		*	mg/Kg	0.005	0.025	09/28/21 13:25	bsu
Lead, total (3050)	M6020B ICP-MS	505	14.0			mg/Kg	0.0505	0.253	09/29/21 17:36	bsu
Magnesium (1312)	M6010D ICP	1	0.88	B	*	mg/L	0.2	1	09/30/21 13:32	jlw
Magnesium, extractable (AB-DTPA)	M6010D ICP	50	92.5		*	mg/Kg	10	50	09/28/21 23:16	jlw
Magnesium, total (3050)	M6010D ICP	101	2780			mg/Kg	20.2	101	09/29/21 3:01	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/30/21 13:32	jlw
Manganese, extractable (AB-DTPA)	M6010D ICP	50	4.29		*	mg/Kg	0.5	2.5	09/28/21 23:16	jlw
Manganese, total (3050)	M6010D ICP	101	319		*	mg/Kg	1.01	5.05	09/29/21 3:01	jlw
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/30/21 13:32	jlw
Molybdenum, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	5	09/28/21 23:16	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/29/21 3:01	jlw

Hudbay Minerals
Project ID:
Sample ID: D1-20A TREE

ACZ Sample ID: ***L68737-02***
Date Sampled: *09/21/21 08:30*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Nickel (1312)	M6020B ICP-MS	1	0.00072	B	*	mg/L	0.0004	0.001	09/30/21 14:27	bsu
Nickel, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0855		*	mg/Kg	0.02	0.05	09/28/21 13:25	bsu
Nickel, total (3050)	M6020B ICP-MS	505	6.53			mg/Kg	0.202	0.505	09/29/21 17:36	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/30/21 14:27	bsu
Selenium, extractable (AB-DTPA)	M6020B ICP-MS	50	<0.005	U	*	mg/Kg	0.005	0.0125	09/28/21 13:25	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.101	B	*	mg/Kg	0.0505	0.126	09/29/21 17:36	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/30/21 13:32	jlw
Zinc, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	2.5	09/28/21 23:16	jlw
Zinc, total (3050)	M6010D ICP	101	33.7		*	mg/Kg	2.02	5.05	09/29/21 3:01	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	09/27/21 13:00	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	09/27/21 13:00	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.1	B	*	%	0.1	0.5	09/27/21 13:00	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.364		*	mmhos/cm	0.001	0.01	09/29/21 0:00	zln
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
Temperature		1	21.0		*	C	0.1	0.1	09/29/21 0:00	zln
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14	1	0.8	B	*	%	0.3	1	09/28/21 11:00	gkh
pH, (1312)	M9045D/M9040C									
pH			8.5			Units	0.1	0.1	10/05/21 0:00	ZLN
Temperature			21			Units	0.1	0.1	10/05/21 0:00	ZLN
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
pH		1	7.5		*	units	0.1	0.1	09/29/21 0:00	zln
Solids, Percent	D2216-80	1	98.6		*	%	0.1	0.5	09/27/21 22:25	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	09/27/21 13:03	jpb
Texture by Hydrometer	ASA No. 9 Pt. 1 Section 15-5									
Clay		1	22.5		*	%	0.1	0.5	09/30/21 0:00	zln
Sand		1	70.0		*	%	0.1	0.5	09/30/21 0:00	zln
Silt		1	7.5		*	%	0.1	0.5	09/30/21 0:00	zln
Texture Classification		1	sandy clay loam		*				09/30/21 0:00	zln

Hudbay Minerals
Project ID:
Sample ID: D1-20A TREE

ACZ Sample ID: ***L68737-02***
Date Sampled: *09/21/21 08:30*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
AB-DTPA Extraction	ASA No. 9, 3-5.2.3								09/27/21 14:40	gkh
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/23/21 16:14	gkh
Digestion - Hot Plate	M3050B ICP								09/27/21 12:23	mep
Digestion - Hot Plate	M3050B ICP-MS								09/27/21 12:23	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/28/21 17:31	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/24/21 10:23	mep
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/24/21 10:23	mep
Synthetic Precip. Leaching Procedure	M1312								09/28/21 1:47	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: NH-E

ACZ Sample ID: ***L68737-03***
Date Sampled: *09/21/21 10:00*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/29/21 12:36	bsu
Total Hot Plate Digestion (1312)	M3010A ICP								09/29/21 15:35	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.510			mg/L	0.05	0.25	09/30/21 13:40	jlw
Aluminum, total (3050)	M6010D ICP	100	3480		*	mg/Kg	5	25	09/29/21 3:04	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/30/21 14:32	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.214	B	*	mg/Kg	0.2	1	09/29/21 17:38	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00234		*	mg/L	0.0002	0.001	09/30/21 14:32	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	3.92			mg/Kg	0.1	0.5	09/29/21 17:38	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/30/21 14:32	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.141			mg/Kg	0.025	0.125	09/29/21 17:38	bsu
Calcium (1312)	M6010D ICP	1	8.17			mg/L	0.1	0.5	09/30/21 13:40	jlw
Calcium, total (3050)	M6010D ICP	100	12100			mg/Kg	10	50	09/29/21 3:04	jlw
Copper (1312)	M6020B ICP-MS	1	0.00222		*	mg/L	0.0008	0.002	09/30/21 14:32	bsu
Copper, total (3050)	M6020B ICP-MS	500	8.53			mg/Kg	0.4	1	09/29/21 17:38	bsu
Iron (1312)	M6010D ICP	1	0.171		*	mg/L	0.06	0.15	09/30/21 13:40	jlw
Iron, total (3050)	M6010D ICP	100	5790		*	mg/Kg	6	15	09/29/21 3:04	jlw
Lead (1312)	M6020B ICP-MS	1	0.00028	B	*	mg/L	0.0001	0.0005	09/30/21 14:32	bsu
Lead, total (3050)	M6020B ICP-MS	500	8.31			mg/Kg	0.05	0.25	09/29/21 17:38	bsu
Magnesium (1312)	M6010D ICP	1	0.38	B	*	mg/L	0.2	1	09/30/21 13:40	jlw
Magnesium, total (3050)	M6010D ICP	100	1580			mg/Kg	20	100	09/29/21 3:04	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/30/21 13:40	jlw
Manganese, total (3050)	M6010D ICP	100	119		*	mg/Kg	1	5	09/29/21 3:04	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/29/21 11:57	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.09	B	*	ng/g	2.51	12.55	09/29/21 13:01	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/30/21 13:40	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	09/29/21 3:04	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/30/21 14:32	bsu
Nickel, total (3050)	M6020B ICP-MS	500	3.21			mg/Kg	0.2	0.5	09/29/21 17:38	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/30/21 14:32	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.389		*	mg/Kg	0.05	0.125	09/29/21 17:38	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/30/21 14:32	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	09/29/21 17:38	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/30/21 13:40	jlw
Zinc, total (3050)	M6010D ICP	100	17.9		*	mg/Kg	2	5	09/29/21 3:04	jlw

Hudbay Minerals
Project ID:
Sample ID: NH-E

ACZ Sample ID: ***L68737-03***
Date Sampled: *09/21/21 10:00*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.8		*	%	0.1	0.5	09/27/21 13:07	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	1.0		*	%	0.1	0.5	09/27/21 13:07	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.8		*	%	0.1	0.5	09/27/21 13:07	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.155		*	mmhos/cm	0.001	0.01	09/29/21 0:00	zln
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
Temperature		1	21.1		*	C	0.1	0.1	09/29/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
pH		1	7.7		*	units	0.1	0.1	09/29/21 0:00	zln
Solids, Percent	D2216-80	1	99.5		*	%	0.1	0.5	09/28/21 11:17	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.04	B	*	%	0.01	0.1	09/27/21 13:10	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/23/21 16:18	gkh
Digestion - Hot Plate	M3050B ICP								09/27/21 12:56	mep
Digestion - Hot Plate	M3050B ICP-MS								09/27/21 12:56	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/28/21 17:38	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/24/21 10:37	mep
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/24/21 10:37	mep
Synthetic Precip. Leaching Procedure	M1312								09/28/21 6:31	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D1-20B

ACZ Sample ID: ***L68737-04***
Date Sampled: *09/21/21 10:11*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/29/21 13:34	bsu
Total Hot Plate Digestion (1312)	M3010A ICP								09/29/21 16:10	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.912			mg/L	0.05	0.25	09/30/21 13:44	jlw
Aluminum, total (3050)	M6010D ICP	100	3020		*	mg/Kg	5	25	09/29/21 3:08	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/30/21 14:36	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.228	B	*	mg/Kg	0.2	1	09/29/21 17:40	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00183		*	mg/L	0.0002	0.001	09/30/21 14:36	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	11.1			mg/Kg	0.1	0.5	09/29/21 17:40	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/30/21 14:36	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.127			mg/Kg	0.025	0.125	09/29/21 17:40	bsu
Calcium (1312)	M6010D ICP	1	5.85			mg/L	0.1	0.5	09/30/21 13:44	jlw
Calcium, total (3050)	M6010D ICP	100	3880			mg/Kg	10	50	09/29/21 3:08	jlw
Copper (1312)	M6020B ICP-MS	1	0.00458		*	mg/L	0.0008	0.002	09/30/21 14:36	bsu
Copper, total (3050)	M6020B ICP-MS	500	6.82			mg/Kg	0.4	1	09/29/21 17:40	bsu
Iron (1312)	M6010D ICP	1	0.425		*	mg/L	0.06	0.15	09/30/21 13:44	jlw
Iron, total (3050)	M6010D ICP	100	6450		*	mg/Kg	6	15	09/29/21 3:08	jlw
Lead (1312)	M6020B ICP-MS	1	0.00090		*	mg/L	0.0001	0.0005	09/30/21 14:36	bsu
Lead, total (3050)	M6020B ICP-MS	500	6.79			mg/Kg	0.05	0.25	09/29/21 17:40	bsu
Magnesium (1312)	M6010D ICP	1	0.43	B	*	mg/L	0.2	1	09/30/21 13:44	jlw
Magnesium, total (3050)	M6010D ICP	100	969			mg/Kg	20	100	09/29/21 3:08	jlw
Manganese (1312)	M6010D ICP	1	0.012	B	*	mg/L	0.01	0.05	09/30/21 13:44	jlw
Manganese, total (3050)	M6010D ICP	100	99.0		*	mg/Kg	1	5	09/29/21 3:08	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/29/21 11:57	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	<2.05	U	*	ng/g	2.05	10.25	09/29/21 13:09	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/30/21 13:44	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	09/29/21 3:08	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00046	B	*	mg/L	0.0004	0.001	09/30/21 14:36	bsu
Nickel, total (3050)	M6020B ICP-MS	500	2.34			mg/Kg	0.2	0.5	09/29/21 17:40	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/30/21 14:36	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.118	B	*	mg/Kg	0.05	0.125	09/29/21 17:40	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/30/21 14:36	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	09/29/21 17:40	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/30/21 13:44	jlw
Zinc, total (3050)	M6010D ICP	100	14.9		*	mg/Kg	2	5	09/29/21 3:08	jlw

Hudbay Minerals
Project ID:
Sample ID: D1-20B

ACZ Sample ID: ***L68737-04***
Date Sampled: *09/21/21 10:11*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	09/27/21 13:15	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	09/27/21 13:15	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/27/21 13:15	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.114		*	mmhos/cm	0.001	0.01	09/29/21 0:00	zln
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
Temperature		1	20.5		*	C	0.1	0.1	09/29/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
pH		1	7.8		*	units	0.1	0.1	09/29/21 0:00	zln
Solids, Percent	D2216-80	1	99.6		*	%	0.1	0.5	09/28/21 17:42	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	09/27/21 13:16	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/23/21 16:22	gkh
Digestion - Hot Plate	M3050B ICP								09/27/21 13:30	mep
Digestion - Hot Plate	M3050B ICP-MS								09/27/21 13:30	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/28/21 17:45	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/24/21 10:51	mep
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/24/21 10:51	mep
Synthetic Precip. Leaching Procedure	M1312								09/28/21 8:06	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: D1-20B TREE

ACZ Sample ID: ***L68737-05***
Date Sampled: *09/21/21 10:11*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/29/21 17:20	jlw
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/29/21 15:31	bsu

Hudbay Minerals
Project ID:
Sample ID: D1-20B TREE

ACZ Sample ID: ***L68737-05***
Date Sampled: *09/21/21 10:11*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.285			mg/L	0.05	0.25	09/30/21 14:00	jlw
Aluminum, extractable (AB-DTPA)	M6010D ICP	50	<2.5	U	*	mg/Kg	2.5	12.5	09/28/21 23:34	jlw
Aluminum, total (3050)	M6010D ICP	101	9260		*	mg/Kg	5.05	25.3	09/29/21 3:23	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/30/21 14:40	bsu
Antimony, extractable (AD-DTPA)	M6020B ICP-MS	50	<0.02	U	*	mg/Kg	0.02	0.1	09/28/21 13:31	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.300	B	*	mg/Kg	0.202	1.01	09/29/21 17:46	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00454		*	mg/L	0.0002	0.001	09/30/21 14:40	bsu
Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	50	0.115		*	mg/Kg	0.01	0.05	09/28/21 13:31	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	5.51			mg/Kg	0.101	0.505	09/29/21 17:46	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/30/21 14:40	bsu
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.0250		*	mg/Kg	0.0025	0.0125	09/28/21 13:31	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.273			mg/Kg	0.0253	0.126	09/29/21 17:46	bsu
Calcium (1312)	M6010D ICP	1	10.5			mg/L	0.1	0.5	09/30/21 14:00	jlw
Calcium, extractable (AB-DTPA)	M6010D ICP	50	373			mg/Kg	5	25	09/28/21 23:34	jlw
Calcium, total (3050)	M6010D ICP	101	8700			mg/Kg	10.1	50.5	09/29/21 3:23	jlw
Copper (1312)	M6020B ICP-MS	1	0.00767		*	mg/L	0.0008	0.002	09/30/21 14:40	bsu
Copper, extractable (AB-DTPA)	M6020B ICP-MS	50	2.15		*	mg/Kg	0.04	0.1	09/28/21 13:31	bsu
Copper, total (3050)	M6020B ICP-MS	505	21.7			mg/Kg	0.404	1.01	09/29/21 17:46	bsu
Iron (1312)	M6010D ICP	1	0.167		*	mg/L	0.06	0.15	09/30/21 14:00	jlw
Iron, extractable (AB-DTPA)	M6010D ICP	50	6.20	B	*	mg/Kg	3	7.5	09/28/21 23:34	jlw
Iron, total (3050)	M6010D ICP	101	13000		*	mg/Kg	6.06	15.2	09/29/21 3:23	jlw
Lead (1312)	M6020B ICP-MS	1	0.00025	B	*	mg/L	0.0001	0.0005	09/30/21 14:40	bsu
Lead, extractable (AB-DTPA)	M6020B ICP-MS	50	1.15		*	mg/Kg	0.005	0.025	09/28/21 13:31	bsu
Lead, total (3050)	M6020B ICP-MS	505	11.3			mg/Kg	0.0505	0.253	09/29/21 17:46	bsu
Magnesium (1312)	M6010D ICP	1	0.94	B	*	mg/L	0.2	1	09/30/21 14:00	jlw
Magnesium, extractable (AB-DTPA)	M6010D ICP	50	72.7		*	mg/Kg	10	50	09/28/21 23:34	jlw
Magnesium, total (3050)	M6010D ICP	101	2560			mg/Kg	20.2	101	09/29/21 3:23	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/30/21 14:00	jlw
Manganese, extractable (AB-DTPA)	M6010D ICP	50	23.1		*	mg/Kg	0.5	2.5	09/28/21 23:34	jlw
Manganese, total (3050)	M6010D ICP	101	306		*	mg/Kg	1.01	5.05	09/29/21 3:23	jlw
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/30/21 14:00	jlw
Molybdenum, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	5	09/28/21 23:34	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/29/21 3:23	jlw

Hudbay Minerals
Project ID:
Sample ID: D1-20B TREE

ACZ Sample ID: ***L68737-05***
Date Sampled: *09/21/21 10:11*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Nickel (1312)	M6020B ICP-MS	1	0.00075	B	*	mg/L	0.0004	0.001	09/30/21 14:40	bsu
Nickel, extractable (AB-DTPA)	M6020B ICP-MS	50	0.138		*	mg/Kg	0.02	0.05	09/28/21 13:31	bsu
Nickel, total (3050)	M6020B ICP-MS	505	6.08			mg/Kg	0.202	0.505	09/29/21 17:46	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00010	B	*	mg/L	0.0001	0.00025	09/30/21 14:40	bsu
Selenium, extractable (AB-DTPA)	M6020B ICP-MS	50	0.00604	B	*	mg/Kg	0.005	0.0125	09/28/21 13:31	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.110	B	*	mg/Kg	0.0505	0.126	09/29/21 17:46	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/30/21 14:00	jlw
Zinc, extractable (AB-DTPA)	M6010D ICP	50	<1	U	*	mg/Kg	1	2.5	09/28/21 23:34	jlw
Zinc, total (3050)	M6010D ICP	101	31.0		*	mg/Kg	2.02	5.05	09/29/21 3:23	jlw

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	09/27/21 13:22	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	09/27/21 13:22	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	09/27/21 13:22	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.120		*	mmhos/cm	0.001	0.01	09/29/21 0:00	zln
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
Temperature		1	21.0		*	C	0.1	0.1	09/29/21 0:00	zln
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14	1	1.3		*	%	0.3	1	09/28/21 11:00	gkh
pH, (1312)	M9045D/M9040C									
pH			8.5			Units	0.1	0.1	10/05/21 0:00	ZLN
Temperature			20.7			Units	0.1	0.1	10/05/21 0:00	ZLN
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
pH		1	7.7		*	units	0.1	0.1	09/29/21 0:00	zln
Solids, Percent	D2216-80	1	98.8		*	%	0.1	0.5	09/29/21 0:08	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	09/27/21 13:23	jpb
Texture by Hydrometer	ASA No. 9 Pt. 1 Section 15-5									
Clay		1	7.5		*	%	0.1	0.5	09/30/21 0:00	zln
Sand		1	75.0		*	%	0.1	0.5	09/30/21 0:00	zln
Silt		1	17.5		*	%	0.1	0.5	09/30/21 0:00	zln
Texture Classification		1	sandy loam		*				09/30/21 0:00	zln

Hudbay Minerals
Project ID:
Sample ID: D1-20B TREE

ACZ Sample ID: ***L68737-05***
Date Sampled: *09/21/21 10:11*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
AB-DTPA Extraction	ASA No. 9, 3-5.2.3				*				09/27/21 14:59	gkh
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/23/21 16:26	gkh
Digestion - Hot Plate	M3050B ICP								09/27/21 14:04	mep
Digestion - Hot Plate	M3050B ICP-MS								09/27/21 14:04	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/28/21 17:52	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/24/21 11:05	mep
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/24/21 11:05	mep
Synthetic Precip. Leaching Procedure	M1312								09/28/21 12:50	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-NH

ACZ Sample ID: ***L68737-06***
Date Sampled: *09/21/21 11:00*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/29/21 16:30	bsu
Total Hot Plate Digestion (1312)	M3010A ICP								09/29/21 17:55	jlw

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.793			mg/L	0.05	0.25	09/30/21 14:06	jlw
Aluminum, total (3050)	M6010D ICP	100	4270		*	mg/Kg	5	25	09/29/21 3:27	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/30/21 14:41	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.332	B	*	mg/Kg	0.2	1	09/29/21 17:48	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00278		*	mg/L	0.0002	0.001	09/30/21 14:41	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	3.30			mg/Kg	0.1	0.5	09/29/21 17:48	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/30/21 14:41	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.195			mg/Kg	0.025	0.125	09/29/21 17:48	bsu
Calcium (1312)	M6010D ICP	1	4.70			mg/L	0.1	0.5	09/30/21 14:06	jlw
Calcium, total (3050)	M6010D ICP	100	2450			mg/Kg	10	50	09/29/21 3:27	jlw
Copper (1312)	M6020B ICP-MS	1	0.00424		*	mg/L	0.0008	0.002	09/30/21 14:41	bsu
Copper, total (3050)	M6020B ICP-MS	500	15.7			mg/Kg	0.4	1	09/29/21 17:48	bsu
Iron (1312)	M6010D ICP	1	0.426		*	mg/L	0.06	0.15	09/30/21 14:06	jlw
Iron, total (3050)	M6010D ICP	100	8090		*	mg/Kg	6	15	09/29/21 3:27	jlw
Lead (1312)	M6020B ICP-MS	1	0.00084		*	mg/L	0.0001	0.0005	09/30/21 14:41	bsu
Lead, total (3050)	M6020B ICP-MS	500	10.9			mg/Kg	0.05	0.25	09/29/21 17:48	bsu
Magnesium (1312)	M6010D ICP	1	0.59	B	*	mg/L	0.2	1	09/30/21 14:06	jlw
Magnesium, total (3050)	M6010D ICP	100	1520			mg/Kg	20	100	09/29/21 3:27	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/30/21 14:06	jlw
Manganese, total (3050)	M6010D ICP	100	159		*	mg/Kg	1	5	09/29/21 3:27	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/29/21 11:59	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	4.9	B	*	ng/g	2.27	11.35	09/29/21 13:17	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/30/21 14:06	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	09/29/21 3:27	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00065	B	*	mg/L	0.0004	0.001	09/30/21 14:41	bsu
Nickel, total (3050)	M6020B ICP-MS	500	4.42			mg/Kg	0.2	0.5	09/29/21 17:48	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/30/21 14:41	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.0961	B	*	mg/Kg	0.05	0.125	09/29/21 17:48	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/30/21 14:41	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0500	B		mg/Kg	0.05	0.25	09/29/21 17:48	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/30/21 14:06	jlw
Zinc, total (3050)	M6010D ICP	100	26.0		*	mg/Kg	2	5	09/29/21 3:27	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-NH

ACZ Sample ID: ***L68737-06***
Date Sampled: *09/21/21 11:00*
Date Received: *09/23/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	09/27/21 13:30	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	09/27/21 13:30	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	09/27/21 13:30	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.346		*	mmhos/cm	0.001	0.01	09/29/21 0:00	zln
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
Temperature		1	20.6		*	C	0.1	0.1	09/29/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/29/21 0:00	zln
pH		1	7.8		*	units	0.1	0.1	09/29/21 0:00	zln
Solids, Percent	D2216-80	1	99.5		*	%	0.1	0.5	09/29/21 6:34	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/27/21 13:30	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/23/21 16:30	gkh
Digestion - Hot Plate	M3050B ICP								09/27/21 14:38	mep
Digestion - Hot Plate	M3050B ICP-MS								09/27/21 14:38	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/28/21 18:00	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/24/21 11:20	mep
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/24/21 11:20	mep
Synthetic Precip. Leaching Procedure	M1312								09/28/21 14:25	zln

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Aluminum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528378													
WG528378ICV	ICV	09/30/21 12:44	II210923-1	2		2.002	mg/L	100	90	110			
WG528378ICB	ICB	09/30/21 12:48				U	mg/L		-0.15	0.15			
WG528053PBS	PBS	09/30/21 13:12				U	mg/L		-0.15	0.15			
WG528053LFB1	LFB	09/30/21 13:16	II210910-2	1.0008		1.019	mg/L	102	80	120			
L68737-01MS	MS	09/30/21 13:24	II210910-2	1.0008	.42	1.504	mg/L	108	75	125			
L68737-01MSD	MSD	09/30/21 13:28	II210910-2	1.0008	.42	1.5	mg/L	108	75	125	0	20	
L68737-04DUP	DUP	09/30/21 13:48			.912	.932	mg/L				2	20	

Aluminum, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528179													
WG528179ICV	ICV	09/28/21 22:22	II210916-1	2		1.973	mg/L	99	90	110			
WG528179ICB	ICB	09/28/21 22:26				U	mg/L		-0.15	0.15			
WG527982PBS	PBS	09/28/21 22:49				U	mg/Kg		-7.5	7.5			
L68617-01DUP	DUP	09/28/21 22:57			U	U	mg/Kg				0	20	RA
L68737-02AS	AS	09/28/21 23:19	II210910-2	50.04	U	51.8	mg/Kg	104	75	125			
L68737-02ASD	ASD	09/28/21 23:23	II210910-2	50.04	U	51.7	mg/Kg	103	75	125	0	20	

Aluminum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528152													
WG528152ICV	ICV	09/29/21 2:08	II210923-1	2		1.944	mg/L	97	90	110			
WG528152ICB	ICB	09/29/21 2:12				U	mg/L		-0.15	0.15			
WG527917PBS	PBS	09/29/21 2:35				U	mg/Kg		-15	15			
WG527917LCSS	LCSS	09/29/21 2:39	PCN63760	8130		9723	mg/Kg		3920	12300			
WG527917LCSSD	LCSSD	09/29/21 2:42	PCN63760	8130		9447	mg/Kg		3920	12300	3	20	
L68484-01MS	MS	09/29/21 2:50	II210910-2	106.0848	4510	5253.36	mg/Kg	701	75	125			M3
L68484-01MSD	MSD	09/29/21 2:53	II210910-2	106.0848	4510	5038.18	mg/Kg	498	75	125	4	20	M3

Antimony (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.0201		.02005	mg/L	100	90	110			
WG528395ICB	ICB	09/30/21 14:14				U	mg/L		-0.0012	0.0012			
WG528053PBS	PBS	09/30/21 14:22				U	mg/L		-0.0012	0.0012			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.01		.01041	mg/L	104	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.01	U	.0104	mg/L	104	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.01	U	.0104	mg/L	104	75	125	0	20	
L68737-04DUP	DUP	09/30/21 14:38			U	U	mg/L				0	20	RA

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Antimony, extractable (AD-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528156													
WG528156ICV	ICV	09/28/21 12:58	MS210727-2	.0201		.01932	mg/L	96	90	110			
WG528156ICB	ICB	09/28/21 13:00				U	mg/L		-0.0012	0.0012			
WG527982PBS	PBS	09/28/21 13:09				U	mg/Kg		-0.06	0.06			
L68617-01DUP	DUP	09/28/21 13:12			U	U	mg/Kg				0	20	RA
L68737-02AS	AS	09/28/21 13:27	MS210927-3	.5	U	.47827	mg/Kg	96	75	125			
L68737-02ASD	ASD	09/28/21 13:29	MS210927-3	.5	U	.46984	mg/Kg	94	75	125	2	20	

Antimony, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.0201		.01911	mg/L	95	90	110			
WG528333ICB	ICB	09/29/21 16:58				U	mg/L		-0.0012	0.0012			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-0.6	0.6			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	134		95.3134	mg/Kg		4.56	264			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	134		100.33361	mg/Kg		4.56	264	5	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	5.05	.367	1.84775	mg/Kg	29	75	125			M2
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	5.05	.367	1.89372	mg/Kg	30	75	125	2	20	M2

Arsenic (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.05		.04968	mg/L	99	90	110			
WG528395ICB	ICB	09/30/21 14:14				U	mg/L		-0.0006	0.0006			
WG528053PBS	PBS	09/30/21 14:22				U	mg/L		-0.0006	0.0006			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.05005		.05022	mg/L	100	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.05005	.00455	.05525	mg/L	101	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.05005	.00455	.05322	mg/L	97	75	125	4	20	
L68737-04DUP	DUP	09/30/21 14:38			.00183	.00199	mg/L				8	20	RA

Arsenic, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528156													
WG528156ICV	ICV	09/28/21 12:58	MS210727-2	.05		.05199	mg/L	104	90	110			
WG528156ICB	ICB	09/28/21 13:00				U	mg/L		-0.0006	0.0006			
WG527982PBS	PBS	09/28/21 13:09				U	mg/Kg		-0.03	0.03			
L68617-01DUP	DUP	09/28/21 13:12			.132	.13402	mg/Kg				2	20	
L68737-02AS	AS	09/28/21 13:27	MS210927-3	2.5025	.13	2.88309	mg/Kg	110	75	125			
L68737-02ASD	ASD	09/28/21 13:29	MS210927-3	2.5025	.13	3.05815	mg/Kg	117	75	125	6	20	

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Arsenic, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.05		.04882	mg/L	98	90	110			
WG528333ICB	ICB	09/29/21 16:58				U	mg/L		-0.0006	0.0006			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-0.3	0.3			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	156		168.90336	mg/Kg		129	183			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	156		166.28689	mg/Kg		129	183	2	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	25.27525	8.68	29.00505	mg/Kg	80	75	125			
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	25.27525	8.68	29.48284	mg/Kg	82	75	125	2	20	

Cadmium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.05		.051239	mg/L	102	90	110			
WG528395ICB	ICB	09/30/21 14:14				U	mg/L		-0.00015	0.00015			
WG528053PBS	PBS	09/30/21 14:22				U	mg/L		-0.00015	0.00015			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.05005		.049358	mg/L	99	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.05005	U	.048856	mg/L	98	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.05005	U	.048247	mg/L	96	75	125	1	20	
L68737-04DUP	DUP	09/30/21 14:38			U	U	mg/L				0	20	RA

Cadmium, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528156													
WG528156ICV	ICV	09/28/21 12:58	MS210727-2	.05		.052128	mg/L	104	90	110			
WG528156ICB	ICB	09/28/21 13:00				U	mg/L		-0.00015	0.00015			
WG527982PBS	PBS	09/28/21 13:09				U	mg/Kg		-0.0075	0.0075			
L68617-01DUP	DUP	09/28/21 13:12			.0304	.030831	mg/Kg				1	20	
L68737-02AS	AS	09/28/21 13:27	MS210927-3	2.5025	.0251	2.32271	mg/Kg	92	75	125			
L68737-02ASD	ASD	09/28/21 13:29	MS210927-3	2.5025	.0251	2.40742	mg/Kg	95	75	125	4	20	

Cadmium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.05		.04964	mg/L	99	90	110			
WG528333ICB	ICB	09/29/21 16:58				U	mg/L		-0.00015	0.00015			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-0.075	0.075			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	137		147.54452	mg/Kg		113	160			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	137		153.48636	mg/Kg		113	160	4	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	25.27525	.246	24.670665	mg/Kg	97	75	125			
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	25.27525	.246	24.474314	mg/Kg	96	75	125	1	20	

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Calcium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528378													
WG528378ICV	ICV	09/30/21 12:44	II210923-1	100		101.2	mg/L	101	90	110			
WG528378ICB	ICB	09/30/21 12:48				U	mg/L		-0.3	0.3			
WG528053PBS	PBS	09/30/21 13:12				U	mg/L		-0.3	0.3			
WG528053LFB1	LFB	09/30/21 13:16	II210910-2	67.98972		69.06	mg/L	102	80	120			
L68737-01MS	MS	09/30/21 13:24	II210910-2	67.98972	7.49	76.08	mg/L	101	75	125			
L68737-01MSD	MSD	09/30/21 13:28	II210910-2	67.98972	7.49	75.74	mg/L	100	75	125	0	20	
L68737-04DUP	DUP	09/30/21 13:48			5.85	6.18	mg/L				5	20	

Calcium, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528179													
WG528179ICV	ICV	09/28/21 22:22	II210916-1	100		98.63	mg/L	99	90	110			
WG528179ICB	ICB	09/28/21 22:26				.13	mg/L		-0.3	0.3			
WG527982PBS	PBS	09/28/21 22:49				U	mg/Kg		-15	15			
L68617-01DUP	DUP	09/28/21 22:57			397	400.3	mg/Kg				1	20	
L68737-02AS	AS	09/28/21 23:19	II210910-2	3399.486	390	3805	mg/Kg	100	75	125			
L68737-02ASD	ASD	09/28/21 23:23	II210910-2	3399.486	390	3832.5	mg/Kg	101	75	125	1	20	

Calcium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528152													
WG528152ICV	ICV	09/29/21 2:08	II210923-1	100		100.2	mg/L	100	90	110			
WG528152ICB	ICB	09/29/21 2:12				U	mg/L		-0.3	0.3			
WG527917PBS	PBS	09/29/21 2:35				U	mg/Kg		-30	30			
WG527917LCSS	LCSS	09/29/21 2:39	PCN63760	4760		5032	mg/Kg		3890	5640			
WG527917LCSSD	LCSSD	09/29/21 2:42	PCN63760	4760		5114	mg/Kg		3890	5640	2	20	
L68484-01MS	MS	09/29/21 2:50	II210910-2	7206.91032	11500	20214.2	mg/Kg	121	75	125			
L68484-01MSD	MSD	09/29/21 2:53	II210910-2	7206.91032	11500	19292	mg/Kg	108	75	125	5	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528047													
WG528047PBS	PBS	09/27/21 12:30				U	%		-0.3	0.3			
WG528047LCSS	LCSS	09/27/21 12:37	PCN63155	4.35		4.3	%	99	80	120			
L68737-01DUP	DUP	09/27/21 12:52			.3	.3	%				0	20	RA

Carbon, total inorganic (TIC) ASA No. 9 29-2.2.4 (calc TC - TOC)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528047													
WG528047PBS	PBS	09/27/21 12:30				U	%		-0.3	0.3			
L68737-01DUP	DUP	09/27/21 12:52			.3	.2	%				40	20	RA

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528047													
WG528047PBS	PBS	09/27/21 12:30				U	%		-0.3	0.3			
L68737-01DUP	DUP	09/27/21 12:52			U	.1	%				200	20	RA

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ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528266													
L68737-01DUP	DUP	09/29/21 10:45			.286	.267	mmhos/cm				7	20	

Copper (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.05		.0513	mg/L	103	90	110			
WG528395ICB	ICB	09/30/21 14:14				U	mg/L		-0.0024	0.0024			
WG528053PBS	PBS	09/30/21 14:22				.00111	mg/L		-0.0024	0.0024			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.05		.05153	mg/L	103	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.05	.00316	.05338	mg/L	100	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.05	.00316	.05206	mg/L	98	75	125	3	20	
L68737-04DUP	DUP	09/30/21 14:38			.00458	.00602	mg/L				27	20	RA

Copper, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528156													
WG528156ICV	ICV	09/28/21 12:58	MS210727-2	.05		.05321	mg/L	106	90	110			
WG528156ICB	ICB	09/28/21 13:00				U	mg/L		-0.0024	0.0024			
WG527982PBS	PBS	09/28/21 13:09				U	mg/Kg		-0.12	0.12			
L68617-01DUP	DUP	09/28/21 13:12			3.02	3.0607	mg/Kg				1	20	
L68737-02AS	AS	09/28/21 13:27	MS210927-3	2.5	1.62	3.85993	mg/Kg	90	75	125			
L68737-02ASD	ASD	09/28/21 13:29	MS210927-3	2.5	1.62	3.96258	mg/Kg	94	75	125	3	20	

Copper, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.05		.0499	mg/L	100	90	110			
WG528333ICB	ICB	09/29/21 16:58				U	mg/L		-0.0024	0.0024			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-1.2	1.2			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	54.9		59.73411	mg/Kg		46.1	63.6			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	54.9		58.2424	mg/Kg		46.1	63.6	3	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	25.25	12.4	35.63094	mg/Kg	92	75	125			
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	25.25	12.4	35.96502	mg/Kg	93	75	125	1	20	

Iron (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528378													
WG528378ICV	ICV	09/30/21 12:44	II210923-1	2		1.974	mg/L	99	90	110			
WG528378ICB	ICB	09/30/21 12:48				U	mg/L		-0.18	0.18			
WG528053PBS	PBS	09/30/21 13:12				U	mg/L		-0.18	0.18			
WG528053LFB1	LFB	09/30/21 13:16	II210910-2	1.0001		.998	mg/L	100	80	120			
L68737-01MS	MS	09/30/21 13:24	II210910-2	1.0001	.234	1.218	mg/L	98	75	125			
L68737-01MSD	MSD	09/30/21 13:28	II210910-2	1.0001	.234	1.211	mg/L	98	75	125	1	20	
L68737-04DUP	DUP	09/30/21 13:48			.425	.456	mg/L				7	20	RA

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528179													
WG528179ICV	ICV	09/28/21 22:22	II210916-1	2		1.963	mg/L	98	90	110			
WG528179ICB	ICB	09/28/21 22:26				U	mg/L		-0.18	0.18			
WG527982PBS	PBS	09/28/21 22:49				U	mg/Kg		-9	9			
L68617-01DUP	DUP	09/28/21 22:57			5.94	5.82	mg/Kg				2	20	RA
L68737-02AS	AS	09/28/21 23:19	II210910-2	50.005	5.61	56.25	mg/Kg	101	75	125			
L68737-02ASD	ASD	09/28/21 23:23	II210910-2	50.005	5.61	56.1	mg/Kg	101	75	125	0	20	

Iron, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528152													
WG528152ICV	ICV	09/29/21 2:08	II210923-1	2		1.933	mg/L	97	90	110			
WG528152ICB	ICB	09/29/21 2:12				U	mg/L		-0.18	0.18			
WG527917PBS	PBS	09/29/21 2:35				U	mg/Kg		-18	18			
WG527917LCSS	LCSS	09/29/21 2:39	PCN63760	14100		14530	mg/Kg		8470	19700			
WG527917LCSSD	LCSSD	09/29/21 2:42	PCN63760	14100		14240	mg/Kg		8470	19700	2	20	
L68484-01MS	MS	09/29/21 2:50	II210910-2	106.0106	6000	6328.2	mg/Kg	310	75	125			M3
L68484-01MSD	MSD	09/29/21 2:53	II210910-2	106.0106	6000	6023.98	mg/Kg	23	75	125	5	20	M3

Lead (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.05		.05134	mg/L	103	90	110			
WG528395ICB	ICB	09/30/21 14:14				U	mg/L		-0.0003	0.0003			
WG528053PBS	PBS	09/30/21 14:22				U	mg/L		-0.0003	0.0003			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.05005		.05099	mg/L	102	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.05005	.00017	.05165	mg/L	103	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.05005	.00017	.05059	mg/L	101	75	125	2	20	
L68737-04DUP	DUP	09/30/21 14:38			.0009	.00087	mg/L				3	20	RA

Lead, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528156													
WG528156ICV	ICV	09/28/21 12:58	MS210727-2	.05		.05212	mg/L	104	90	110			
WG528156ICB	ICB	09/28/21 13:00				U	mg/L		-0.0003	0.0003			
WG527982PBS	PBS	09/28/21 13:09				U	mg/Kg		-0.015	0.015			
L68617-01DUP	DUP	09/28/21 13:12			1.4	1.38351	mg/Kg				1	20	
L68737-02AS	AS	09/28/21 13:27	MS210927-3	2.5025	1.43	3.80484	mg/Kg	95	75	125			
L68737-02ASD	ASD	09/28/21 13:29	MS210927-3	2.5025	1.43	3.83113	mg/Kg	96	75	125	1	20	

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Lead, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.05		.05062	mg/L	101	90	110			
WG528333ICB	ICB	09/29/21 16:58				U	mg/L		-0.0003	0.0003			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-0.15	0.15			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	130		149.38571	mg/Kg		107	152			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	130		147.22229	mg/Kg		107	152	1	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	25.27525	9.8	34.34976	mg/Kg	97	75	125			
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	25.27525	9.8	34.13632	mg/Kg	96	75	125	1	20	

Magnesium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528378													
WG528378ICV	ICV	09/30/21 12:44	II210923-1	100		96.59	mg/L	97	90	110			
WG528378ICB	ICB	09/30/21 12:48				U	mg/L		-0.6	0.6			
WG528053PBS	PBS	09/30/21 13:12				U	mg/L		-0.6	0.6			
WG528053LFB1	LFB	09/30/21 13:16	II210910-2	49.99828		47.84	mg/L	96	80	120			
L68737-01MS	MS	09/30/21 13:24	II210910-2	49.99828	.68	48.33	mg/L	95	75	125			
L68737-01MSD	MSD	09/30/21 13:28	II210910-2	49.99828	.68	48.1	mg/L	95	75	125	0	20	
L68737-04DUP	DUP	09/30/21 13:48			.43	.45	mg/L				5	20	RA

Magnesium, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528179													
WG528179ICV	ICV	09/28/21 22:22	II210916-1	100		94.83	mg/L	95	90	110			
WG528179ICB	ICB	09/28/21 22:26				U	mg/L		-0.6	0.6			
WG527982PBS	PBS	09/28/21 22:49				U	mg/Kg		-30	30			
L68617-01DUP	DUP	09/28/21 22:57			88.7	87.5	mg/Kg				1	20	RA
L68737-02AS	AS	09/28/21 23:19	II210910-2	2499.914	92.5	2483.5	mg/Kg	96	75	125			
L68737-02ASD	ASD	09/28/21 23:23	II210910-2	2499.914	92.5	2502.5	mg/Kg	96	75	125	1	20	

Magnesium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528152													
WG528152ICV	ICV	09/29/21 2:08	II210923-1	100		95.51	mg/L	96	90	110			
WG528152ICB	ICB	09/29/21 2:12				U	mg/L		-0.6	0.6			
WG527917PBS	PBS	09/29/21 2:35				U	mg/Kg		-60	60			
WG527917LCSS	LCSS	09/29/21 2:39	PCN63760	2320		2486	mg/Kg		1760	2880			
WG527917LCSSD	LCSSD	09/29/21 2:42	PCN63760	2320		2387	mg/Kg		1760	2880	4	20	
L68484-01MS	MS	09/29/21 2:50	II210910-2	5299.81768	4250	9594.06	mg/Kg	101	75	125			
L68484-01MSD	MSD	09/29/21 2:53	II210910-2	5299.81768	4250	9372.52	mg/Kg	97	75	125	2	20	

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528378													
WG528378ICV	ICV	09/30/21 12:44	II210923-1	2		1.964	mg/L	98	90	110			
WG528378ICB	ICB	09/30/21 12:48				U	mg/L		-0.03	0.03			
WG528053PBS	PBS	09/30/21 13:12				U	mg/L		-0.03	0.03			
WG528053LFB1	LFB	09/30/21 13:16	II210910-2	.5005		.498	mg/L	100	80	120			
L68737-01MS	MS	09/30/21 13:24	II210910-2	.5005	U	.499	mg/L	100	75	125			
L68737-01MSD	MSD	09/30/21 13:28	II210910-2	.5005	U	.496	mg/L	99	75	125	1	20	
L68737-04DUP	DUP	09/30/21 13:48			.012	.013	mg/L				8	20	RA

Manganese, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528179													
WG528179ICV	ICV	09/28/21 22:22	II210916-1	2		1.915	mg/L	96	90	110			
WG528179ICB	ICB	09/28/21 22:26				U	mg/L		-0.03	0.03			
WG527982PBS	PBS	09/28/21 22:49				U	mg/Kg		-1.5	1.5			
L68617-01DUP	DUP	09/28/21 22:57			4.57	4.395	mg/Kg				4	20	RA
L68737-02AS	AS	09/28/21 23:19	II210910-2	25.025	4.29	28.9	mg/Kg	98	75	125			
L68737-02ASD	ASD	09/28/21 23:23	II210910-2	25.025	4.29	29.085	mg/Kg	99	75	125	1	20	

Manganese, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528152													
WG528152ICV	ICV	09/29/21 2:08	II210923-1	2		1.924	mg/L	96	90	110			
WG528152ICB	ICB	09/29/21 2:12				U	mg/L		-0.03	0.03			
WG527917PBS	PBS	09/29/21 2:35				U	mg/Kg		-3	3			
WG527917LCSS	LCSS	09/29/21 2:39	PCN63760	269		275.6	mg/Kg		221	317			
WG527917LCSSD	LCSSD	09/29/21 2:42	PCN63760	269		273.5	mg/Kg		221	317	1	20	
L68484-01MS	MS	09/29/21 2:50	II210910-2	53.053	4160	321.816	mg/Kg	-7235	75	125			M3
L68484-01MSD	MSD	09/29/21 2:53	II210910-2	53.053	4160	271.89	mg/Kg	-7329	75	125	17	20	M3

Mercury (1312) M7470A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528226													
WG528226ICV	ICV	09/29/21 9:54	HG210927-3	.00501		.00507	mg/L	101	95	105			
WG528226ICB	ICB	09/29/21 9:55				U	mg/L		-0.0002	0.0002			
WG528236													
WG528053PBS	PBS	09/29/21 11:52				U	mg/L		-0.0006	0.0006			
WG528053LFB1	LFB	09/29/21 11:53	HG210927-6	.002002		.00199	mg/L	99	85	115			
L68737-01MS	MS	09/29/21 11:55	HG210927-6	.002002	U	.00204	mg/L	102	85	115			
L68737-01MSD	MSD	09/29/21 11:56	HG210927-6	.002002	U	.00205	mg/L	102	85	115	0	20	
L68737-04DUP	DUP	09/29/21 11:58			U	U	mg/L				0	20	RA

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Mercury by Direct Combustion AA M7473 CVAAS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG520390													
WG520390ICV4	ICV	06/04/21 12:43	HG210603-2	10000		10200	ng/g	102	90	110			
WG528235													
WG528235ICV1	ICV	09/29/21 9:40	HG210603-4	100		97.2	ng/g	97	90	110			
WG528235ICV2	ICV	09/29/21 9:47	HG210603-4	100		101	ng/g	101	90	110			
WG528235ICV3	ICV	09/29/21 9:54	HG210915-1	1000		1010	ng/g	101	90	110			
WG528235ICV4	ICV	09/29/21 10:17	HG210603-2	10000		10400	ng/g	104	90	110			
WG528235PBS	PBS	09/29/21 10:35				U	ng/g		-4.44	4.44			
WG528235LCSS	LCSS	09/29/21 10:43	PCN60050	90		83.8	ng/g		80	120			
WG528235LCSSD	LCSSD	09/29/21 10:51	PCN60050	90		83.5	ng/g		80	120	0	20	
L68651-01MS	MS	09/29/21 11:08	HG210915-1				ng/g	90	80	120			
L68651-02DUP	DUP	09/29/21 11:24			93.8	99.6	ng/g				6	20	RA

Molybdenum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528378													
WG528378ICV	ICV	09/30/21 12:44	II210923-1	2		2.004	mg/L	100	90	110			
WG528378ICB	ICB	09/30/21 12:48				U	mg/L		-0.06	0.06			
WG528053PBS	PBS	09/30/21 13:12				U	mg/L		-0.06	0.06			
WG528053LFB1	LFB	09/30/21 13:16	II210910-2	.501		.498	mg/L	99	80	120			
L68737-01MS	MS	09/30/21 13:24	II210910-2	.501	U	.499	mg/L	100	75	125			
L68737-01MSD	MSD	09/30/21 13:28	II210910-2	.501	U	.498	mg/L	99	75	125	0	20	
L68737-04DUP	DUP	09/30/21 13:48			U	U	mg/L				0	20	RA

Molybdenum, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528179													
WG528179ICV	ICV	09/28/21 22:22	II210916-1	2		1.973	mg/L	99	90	110			
WG528179ICB	ICB	09/28/21 22:26				U	mg/L		-0.06	0.06			
WG527982PBS	PBS	09/28/21 22:49				U	mg/Kg		-3	3			
L68617-01DUP	DUP	09/28/21 22:57			U	U	mg/Kg				0	20	RA
L68737-02AS	AS	09/28/21 23:19	II210910-2	25.05	U	24.99	mg/Kg	100	75	125			
L68737-02ASD	ASD	09/28/21 23:23	II210910-2	25.05	U	25.03	mg/Kg	100	75	125	0	20	

Molybdenum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528152													
WG528152ICV	ICV	09/29/21 2:08	II210923-1	2		1.961	mg/L	98	90	110			
WG528152ICB	ICB	09/29/21 2:12				U	mg/L		-0.06	0.06			
WG527917PBS	PBS	09/29/21 2:35				U	mg/Kg		-6	6			
WG527917LCSS	LCSS	09/29/21 2:39	PCN63760	95.4		104.7	mg/Kg		76.4	114			
WG527917LCSSD	LCSSD	09/29/21 2:42	PCN63760	95.4		102.6	mg/Kg		76.4	114	2	20	
L68484-01MS	MS	09/29/21 2:50	II210910-2	53.106	8.13	54.272	mg/Kg	87	75	125			
L68484-01MSD	MSD	09/29/21 2:53	II210910-2	53.106	8.13	52.735	mg/Kg	84	75	125	3	20	

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Nickel (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.05		.05113	mg/L	102	90	110			
WG528395ICB	ICB	09/30/21 14:14				U	mg/L		-0.0012	0.0012			
WG528053PBS	PBS	09/30/21 14:22				U	mg/L		-0.0012	0.0012			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.05		.04973	mg/L	99	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.05	.00072	.04981	mg/L	98	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.05	.00072	.04848	mg/L	96	75	125	3	20	
L68737-04DUP	DUP	09/30/21 14:38			.00046	.00051	mg/L				10	20	RA

Nickel, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528156													
WG528156ICV	ICV	09/28/21 12:58	MS210727-2	.05		.05257	mg/L	105	90	110			
WG528156ICB	ICB	09/28/21 13:00				U	mg/L		-0.0012	0.0012			
WG527982PBS	PBS	09/28/21 13:09				U	mg/Kg		-0.06	0.06			
L68617-01DUP	DUP	09/28/21 13:12			.0835	.08246	mg/Kg				1	20	RA
L68737-02AS	AS	09/28/21 13:27	MS210927-3	2.5	.0855	2.31439	mg/Kg	89	75	125			
L68737-02ASD	ASD	09/28/21 13:29	MS210927-3	2.5	.0855	2.45888	mg/Kg	95	75	125	6	20	

Nickel, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.05		.04922	mg/L	98	90	110			
WG528333ICB	ICB	09/29/21 16:58				U	mg/L		-0.0012	0.0012			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-0.6	0.6			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	53.9		58.24188	mg/Kg		44.5	63.3			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	53.9		57.61803	mg/Kg		44.5	63.3	1	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	25.25	4.78	28.61586	mg/Kg	94	75	125			
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	25.25	4.78	28.34485	mg/Kg	93	75	125	1	20	

Organic Matter (Ignition @ 400) EPA 600/2-78-054 M3.2.14

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528133													
WG528133PBS	PBS	09/28/21 11:00				U	%		-0.3	0.3			
L68737-02DUP	DUP	09/28/21 11:00			.8	.8	%				0	20	RA

Percent Clay ASA No. 9 Pt. 1 Section 15-5

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528291													
L68737-05DUP	DUP	09/30/21 17:10			7.5	7.5	%				0	20	

Percent Sand ASA No. 9 Pt. 1 Section 15-5

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528291													
L68737-05DUP	DUP	09/30/21 17:10			75	75	%				0	20	

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Percent Silt ASA No. 9 Pt. 1 Section 15-5

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528291													
L68737-05DUP	DUP	09/30/21 17:10			17.5	17.5	%				0	20	

pH, Saturated Paste EPA 600/2-78-054 section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528266													
WG528266ICV	ICV	09/29/21 10:22	PCN63115	4.01		4	units	100	3.9	4.1			
L68737-01DUP	DUP	09/29/21 10:45			7.5	7.49	units				0	20	

Selenium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.05		.04974	mg/L	99	90	110			
WG528395ICB	ICB	09/30/21 14:14				.0001	mg/L		-0.0003	0.0003			
WG528053PBS	PBS	09/30/21 14:22				U	mg/L		-0.0003	0.0003			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.05		.04828	mg/L	97	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.05	U	.04944	mg/L	99	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.05	U	.0476	mg/L	95	75	125	4	20	
L68737-04DUP	DUP	09/30/21 14:38			U	U	mg/L				0	20	RA

Selenium, extractable (AB-DTPA) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528156													
WG528156ICV	ICV	09/28/21 12:58	MS210727-2	.05		.05115	mg/L	102	90	110			
WG528156ICB	ICB	09/28/21 13:00				.00011	mg/L		-0.0003	0.0003			
WG527982PBS	PBS	09/28/21 13:09				U	mg/Kg		-0.015	0.015			
L68617-01DUP	DUP	09/28/21 13:12			U	U	mg/Kg				0	20	RA
L68737-02AS	AS	09/28/21 13:27	MS210927-3	2.5	U	3.15061	mg/Kg	126	75	125			M1
L68737-02ASD	ASD	09/28/21 13:29	MS210927-3	2.5	U	3.38732	mg/Kg	135	75	125	7	20	M1

Selenium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.05		.04832	mg/L	97	90	110			
WG528333ICB	ICB	09/29/21 16:58				.00013	mg/L		-0.0003	0.0003			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-0.15	0.15			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	167		184.33437	mg/Kg		132	201			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	167		182.90032	mg/Kg		132	201	1	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	12.625	.112	11.84698	mg/Kg	93	75	125			
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	12.625	.112	11.58377	mg/Kg	91	75	125	2	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528051													
L68737-02DUP	DUP	09/28/21 4:51			98.6	98.4	%				0	20	
WG528051PBS	PBS	09/29/21 13:00				U	%		-0.1	0.1			

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sulfur, total ASTM D-4239-85C, LECO Furnace

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528046													
WG528046PBS	PBS	09/27/21 12:30				U	%		-0.03	0.03			
WG528046LCSS	LCSS	09/27/21 12:36	PCN63155	4.01		3.56	%	89	80	120			
L68737-01MS	MS	09/27/21 12:50	PCN63758	1.3	U	1.29	%	99	80	120			
L68737-01DUP	DUP	09/27/21 12:56			U	U	%				0	20	RA

Thallium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528395													
WG528395ICV	ICV	09/30/21 14:12	MS210727-2	.05		.05308	mg/L	106	90	110			
WG528395ICB	ICB	09/30/21 14:14				U	mg/L		-0.0003	0.0003			
WG528053PBS	PBS	09/30/21 14:22				U	mg/L		-0.0003	0.0003			
WG528053LFB2	LFB	09/30/21 14:24	MS210927-3	.05		.05074	mg/L	101	80	120			
L68737-02MS	MS	09/30/21 14:28	MS210927-3	.05	U	.05111	mg/L	102	75	125			
L68737-02MSD	MSD	09/30/21 14:30	MS210927-3	.05	U	.05071	mg/L	101	75	125	1	20	
L68737-04DUP	DUP	09/30/21 14:38			U	U	mg/L				0	20	RA

Thallium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528333													
WG528333ICV	ICV	09/29/21 16:56	MS210727-2	.05		.05058	mg/L	101	90	110			
WG528333ICB	ICB	09/29/21 16:58				U	mg/L		-0.0003	0.0003			
WG527917PBS	PBS	09/29/21 17:27				U	mg/Kg		-0.15	0.15			
WG527917LCSS	LCSS	09/29/21 17:28	PCN63760	112		126.77678	mg/Kg		90.3	133			
WG527917LCSSD	LCSSD	09/29/21 17:30	PCN63760	112		128.03347	mg/Kg		90.3	133	1	20	
L68737-01MS	MS	09/29/21 17:33	MS210826-5	25.25	.0878	25.76103	mg/Kg	102	75	125			
L68737-01MSD	MSD	09/29/21 17:35	MS210826-5	25.25	.0878	24.50392	mg/Kg	97	75	125	5	20	

Zinc (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528378													
WG528378ICV	ICV	09/30/21 12:44	II210923-1	2		1.984	mg/L	99	90	110			
WG528378ICB	ICB	09/30/21 12:48				U	mg/L		-0.06	0.06			
WG528053PBS	PBS	09/30/21 13:12				U	mg/L		-0.06	0.06			
WG528053LFB1	LFB	09/30/21 13:16	II210910-2	.50045		.517	mg/L	103	80	120			
L68737-01MS	MS	09/30/21 13:24	II210910-2	.50045	U	.519	mg/L	104	75	125			
L68737-01MSD	MSD	09/30/21 13:28	II210910-2	.50045	U	.516	mg/L	103	75	125	1	20	
L68737-04DUP	DUP	09/30/21 13:48			U	U	mg/L				0	20	RA

Zinc, extractable (AB-DTPA) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528179													
WG528179ICV	ICV	09/28/21 22:22	II210916-1	2		1.901	mg/L	95	90	110			
WG528179ICB	ICB	09/28/21 22:26				U	mg/L		-0.06	0.06			
WG527982PBS	PBS	09/28/21 22:49				U	mg/Kg		-3	3			
L68617-01DUP	DUP	09/28/21 22:57			U	U	mg/Kg				0	20	RA
L68737-02AS	AS	09/28/21 23:19	II210910-2	25.0225	U	25.615	mg/Kg	102	75	125			
L68737-02ASD	ASD	09/28/21 23:23	II210910-2	25.0225	U	26.25	mg/Kg	105	75	125	2	20	

HUDBAY

ACZ Project ID: ***L68737***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Zinc, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG528152													
WG528152ICV	ICV	09/29/21 2:08	II210923-1	2		1.912	mg/L	96	90	110			
WG528152ICB	ICB	09/29/21 2:12				U	mg/L		-0.06	0.06			
WG527917PBS	PBS	09/29/21 2:35				U	mg/Kg		-6	6			
WG527917LCSS	LCSS	09/29/21 2:39	PCN63760	158		164.2	mg/Kg		128	188			
WG527917LCSSD	LCSSD	09/29/21 2:42	PCN63760	158		161.5	mg/Kg		128	188	2	20	
L68484-01MS	MS	09/29/21 2:50	II210910-2	53.0477	272	351.602	mg/Kg	150	75	125			M3
L68484-01MSD	MSD	09/29/21 2:53	II210910-2	53.0477	272	311.746	mg/Kg	75	75	125	12	20	

Hudbay Minerals ACZ Project ID: ***L68737***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68737-01	WG528152	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528333	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528047	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG528395	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528236	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528235	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

Hudbay Minerals

ACZ Project ID: ***L68737***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG528378	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528046	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Zinc, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68737-02	WG528179	Aluminum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528156	Antimony, extractable (AD-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528333	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528156	Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528395	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528047	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG528395	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528179	Iron, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG528179	Magnesium, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528378	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528179	Manganese, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528378	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528179	Molybdenum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528156	Nickel, extractable (AB-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528133	Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528156	Selenium, extractable (AB-DTPA)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528046	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528179	Zinc, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Zinc, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68737-03	WG528152	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528333	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528047	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG528395	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528236	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528235	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG528378	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528046	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Zinc, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68737-04	WG528152	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528333	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528047	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG528395	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528236	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528235	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG528378	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528046	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Zinc, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68737-05	WG528179	Aluminum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528156	Antimony, extractable (AD-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528333	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528156	Arsenic, extractable (AB-DTPA)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528395	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528047	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG528395	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528179	Iron, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG528179	Magnesium, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528378	Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528179	Manganese, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528378	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528179	Molybdenum, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528156	Nickel, extractable (AB-DTPA)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528133	Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528156	Selenium, extractable (AB-DTPA)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528046	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528179	Zinc, extractable (AB-DTPA)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	VC	CCV recovery was above the acceptance limits. Target analyte was not detected in the sample [< MDL].
	WG528152	Zinc, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68737-06	WG528152	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528333	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Arsenic (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528047	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG528395	Copper (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG528152	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528395	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG528236	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528235	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

Hudbay Minerals

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
	WG528378	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528046	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528395	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528378	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG528152	Zinc, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Antimony, extractable (AD-DTPA)	M6020B ICP-MS
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS
Copper, extractable (AB-DTPA)	M6020B ICP-MS
Lead, extractable (AB-DTPA)	M6020B ICP-MS
Nickel, extractable (AB-DTPA)	M6020B ICP-MS
Selenium (1312)	M6020B ICP-MS
Selenium, extractable (AB-DTPA)	M6020B ICP-MS
Selenium, total (3050)	M6020B ICP-MS
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Antimony, extractable (AD-DTPA)	M6020B ICP-MS
Cadmium, extractable (AB-DTPA)	M6020B ICP-MS
Copper, extractable (AB-DTPA)	M6020B ICP-MS
Lead, extractable (AB-DTPA)	M6020B ICP-MS
Nickel, extractable (AB-DTPA)	M6020B ICP-MS

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Clay	ASA No. 9 Pt. 1 Section 15-5
Conductivity @25C	SM2510B
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Sand	ASA No. 9 Pt. 1 Section 15-5
Silt	ASA No. 9 Pt. 1 Section 15-5
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace
Texture Classification	ASA No. 9 Pt. 1 Section 15-5
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Clay	ASA No. 9 Pt. 1 Section 15-5
Conductivity @25C	SM2510B
Organic Matter (Ignition @ 400)	EPA 600/2-78-054 M3.2.14
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Sand	ASA No. 9 Pt. 1 Section 15-5
Silt	ASA No. 9 Pt. 1 Section 15-5
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace
Texture Classification	ASA No. 9 Pt. 1 Section 15-5

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID: L68737
Date Received: 09/23/2021 15:15
Received By:
Date Printed: 9/24/2021

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA36034	20.1	NA	15	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID:	L68737
Date Received:	09/23/2021 15:15
Received By:	
Date Printed:	9/24/2021

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. 68737

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Holly Beggy
Company: Hudbay Minerals
E-mail: holly.beggy@hudbayminerals.com
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-343-5174

Copy of Report to:

Name: David Krizek
Company: david.krizek@hudbayminerals.com
E-mail: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3527

Invoice to:

Name: Lionelyn Garcia
Company: Hudbay Minerals
E-mail: rosemontinvoices@hudbayminerals.c
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Holly Beggy **Sampler's Site Information** State AZ Zip code 85629 Time Zone AZ

***Sampler's Signature:** Holly Beggy

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: 2021-SOILS
PO#:
Reporting state for compliance testing: No
Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED *(attach list or use quote number)*

	SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Drainage-1 RUSH (Under Plant)	Drainage 1-2-3-4 RUSH	Plant Tissue RUSH						
1	D1-20A	9/21/21 8:30	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2	D1-20A Tree	8:30	SO	1	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
	D1-20A Bio	8:30	PL	1	[ ]	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3	NH-E	10:00	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4	D1-20B	10:11	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5	D1-20B Tree	10:11	SO	1	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
	D1-20B Bio	10:11	PL	1	[ ]	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
6	SCR-NH	11:00	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
					[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

RUSH

Not sieved (soil)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Holly Beggy Holly Beggy	9/21/21, 11:35	[illegible] 9/23/21	15:5

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L68737 Chain of Custod